

Tennessee Pollution Prevention Partnership Success Story



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Increase in Allowable DI Water Conductivity Conserves Resources

The Member

Aircraft manufacturing operations have been conducted at Triumph Aerostructures' Nashville site since the early 1940's, when a predecessor company opened the plant to build bombers in support of the war effort. Today, the Nashville site builds commercial and military aircraft components, including wings, wing panels, stringers, spars, and empennages. Its customers include Airbus, Gulfstream, Cessna, and Lockheed Martin. The plant employs more than 800 people, and has a total footprint of greater than 2 million square feet under roof. The facility continually seeks opportunities to conserve resources and reduce the environmental impacts of its operations.

The Story

Triumph's manufacturing processes include various metal finishing operations, such as chromium anodizing and alkaline cleaning. Immersion rinse water tanks are part of these operations, and the rinse waters must maintain very strict conductivity standards. The rinse waters are recycled through the facility's onsite deionized (DI) water treatment plant, using an ion exchange process. The ion exchange resins must be periodically regenerated, using hydrochloric and sodium hydroxide solutions. The resin regeneration operations use a large volume of city water, and also create a backwash sludge which must be disposed of as hazardous waste.

In May 2010, historical flooding was experienced in Middle Tennessee. At the request of Metro Nashville, Triumph evaluated its operations for water conservation opportunities, due to reduced capacity at the city's water treatment plants. After

consultation with the facility's Quality Lab, it was determined that the allowable conductivity of the process rinse waters could be increased from 100 micromhos to 200 micromhos, while still satisfying customer and process requirements. This increase in conductivity would result in less frequent resin regenerations being required at the DI Water Plant, thus conserving a significant volume of water and reducing waste generation.

The Success

The project was a success, and it was subsequently determined that the increased conductivity could be maintained going forward. After the first 12 months of implementation of the project, Triumph benefited from a savings in utility (city water and sanitary sewer) costs of approximately \$1,900. The facility will also benefit from an annual savings in hazardous waste disposal costs, including state fees of approximately \$1,500.

The Pollution Prevented

The project resulted in a multimedia benefit to the environment. After the first 12 months of implementation of the project, there was a reduction in city water usage of approximately 280,000 gallons, and a reduction in process wastewater discharges to the sanitary sewer system of approximately 210,000 gallons. Hazardous chemical (hydrochloric acid and sodium hydroxide) usage was reduced by approximately 70,000 pounds. Hazardous waste generation was reduced by 80,000 pounds.

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